TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TS1123

Ultra Low Dropout Voltage Regulator Driver with Enable Function

SOT-25

Pin Definition:

1. Output
2. Ground
3. Enable
4. Input
5. Drive

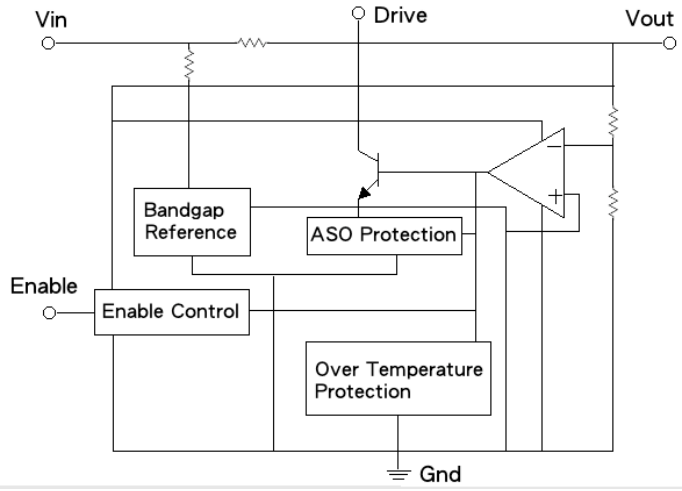
General Description

TS1123 is a low dropout voltage regulator driver for various electronic equipments. It provides constant voltage power source with SOT-25 package. TS1123 with external PNP transistor can drive output current up to 4A, quiescent current is typically at 5mA. Further more, the quiescent current is smaller when the regulator is in the dropout mode (V_{IN}<5.5V). TS1123 has various functions such as a over current protection, thermal shutdown and an output enable function.

Features

- Ultra Low Dropout performance 0.5Vmax.
- Over Current Protection & Thermal Shutdown
- Short Circuit Protection
- Output Enable Function
- ±2.4% Typical Total output

Block Diagram



Ordering Information

Part No.	Package	Packing
TS1123CX5**xx** C0	SOT-25	3Kpcs / 7” Reel

Note: Where **xx** denotes voltage option,

33=3.3V
50=5.0V
80=8.0V
90=9.0V
12=12V
15=15V

Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	35	V
Enable Voltage	V_{EN}	35	V
Output Current	I_{OUT}	200	mA
Power Dissipation	P_D	Internal Limited	
Junction Temperature	T_J	+150	°C
Operating Temperature Range	T_{OPR}	-40 ~ +125	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

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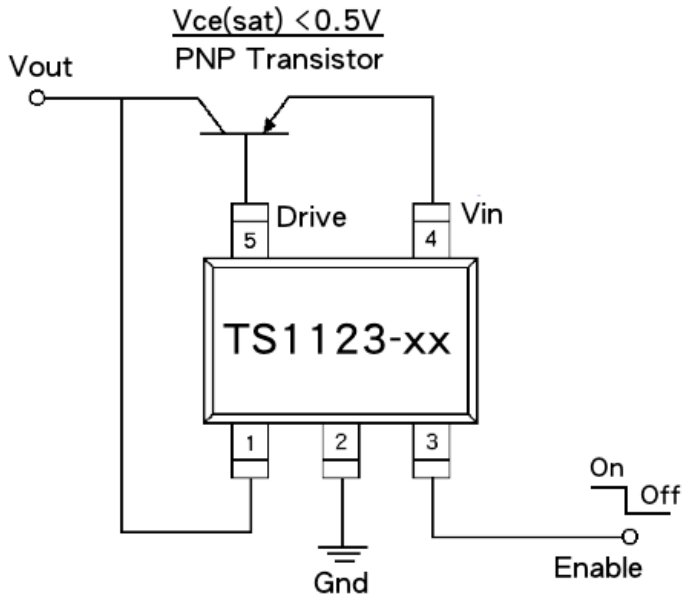
Electrical Specifications (I_O=100mA, Ta=25°C, unless otherwise specified).

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V_{IN} = 5V	3.22	3.3	3.38	V
	V_{IN} = 7V	4.88	5.0	5.12	
	V_{IN} = 10V	7.80	8.0	8.20	
	V_{IN} = 11V	8.78	9.0	9.22	
	V_{IN} = 15V	11.71	12	12.28	
	V_{IN} = 21V	14.64	15	15.36	
Load Regulation	I_{OUT} = 5mA ~ 200mA	--	0.1	2.0	%
Line Regulation	V_{IN} = V_{OUT} + 1 ~ 32V	--	0.5	2.5	%
Ripple Rejection Ratio	Note1	45	55	--	dB
Dropout Voltage	I_{OUT} = 200mA	--	--	0.5	V
Enable Voltage High	Output Active	2.0	--	--	V
Enable Voltage Low	Output Enable	--	--	0.8	V
Enable Bias Current High	V_{EN} = 2.7V	--	--	20	uA
Enable Bias Current Low	V_{EN} = 0.4V	--	--	-0.4	mA
Quiescent Current	I_{OUT} = 0A	--	--	10	mA

Note:
1.These parameters, although guaranteed, are not 100% tested in production.
2. Junction -to -case thermal resistance test environments.
3. Pneumatic heat sink fixture.
4. Clamping pressure 60psi through 12mm diameter cylinder.
5. Thermal grease applied between PKG and heat sink fixture

Typical Application Circuit



Note:
Select different external PNP transistor for different output current

Recommend PNP Transistor:
* TSB1132CY for 1A application circuit
* TSB1424ACY for 2A application circuit
* TSB1184CP for 3A application circuit
* TSB1424ACP for 4A application circuit

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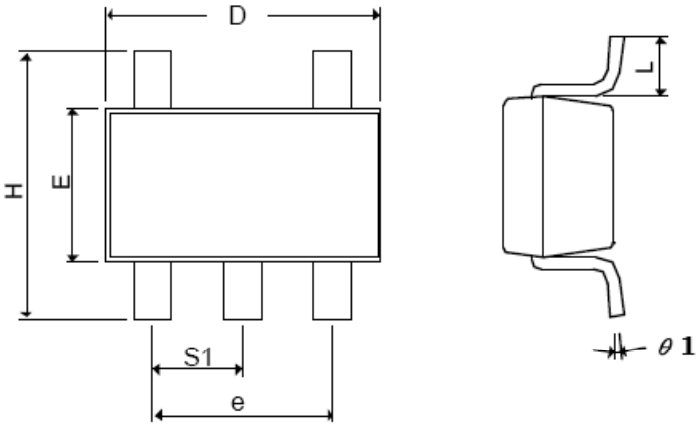
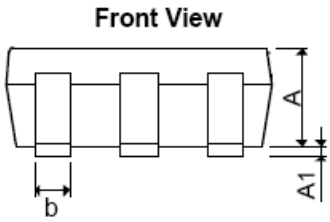
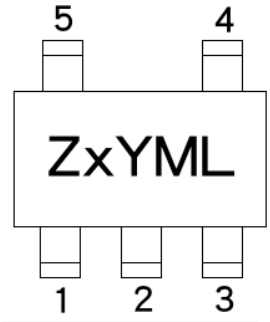
SOT-25 Mechanical Drawing



SOT-25 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A+A1	0.09	1.25	0.0354	0.0492
B	0.30	0.50	0.0118	0.0197
C	0.09	0.25	0.0035	0.0098
D	2.70	3.10	0.1063	0.1220
E	1.40	1.80	0.0551	0.0709
E	1.90 BSC		0.0748 BSC	
H	2.40	3.00	0.09449	0.1181
L	0.35 BSC		0.0138 BSC	
Θ1	0°	10°	0°	10°
S1	0.95 BSC		0.0374 BSC	



Marking Diagram



Z = Device Code
X = Voltage Code
(**S**=3.3V, **5**=5V, **8**=8V, **9**=9V, **1**=12V, **A**=15V)
Y = Year Code
M = Month Code
(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apl, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)
L = Lot Code

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